How Psychological Symptoms Relate to Different Motivations for Gambling: An Online Study of Internet Gamblers

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Background: Gambling can be motivated by both its hedonic value and by attempts to cope with dysphoric or stressful states. Thus, motivations constitute important mechanisms linking mood fluctuations and gambling. However, little is known about how different kinds of affective disturbance, such as mood elevation and dysphoria, motivate gambling behavior.

Methods: To estimate relationships between different mood experiences and gambling motivations, we recruited 4125 Internet gamblers via hyperlinks placed on gambling Web sites. Mean (SD) age of respondents was 35.5 (11.8) years, with 79.1% (3263) being male and 68.8% (2838) UK residents. We collected ratings for 11 gambling motivations. We used principal components analysis, followed by hierarchical linear regression, to model the relationships between motivation factor scores and gambling behavior, depressive symptoms, hypomanic experiences, deliberate self-harm, and alcohol and substance misuse.

Results: Gambling to regulate mood, gambling for monetary goals, and gambling for enjoyment were enhanced in individuals at heightened risk of problematic gambling, with mood regulation and enjoyment factors being enhanced in female compared with male problem gamblers. Lowered mood reduced the enjoyment motivation, whereas previous mood elevation enhanced it. Gambling problems alongside previous hypomanic experiences or current dysphoria enhanced gambling to regulate emotional states.

Conclusions: Recent theorizing argues that mood disorders and pathologic gambling may share aspects of pathophysiology. Different forms of emotional disturbance, such as mood elevation and dysphoric states, which confer heightened risk for bipolar disorder and depression, are associated with divergent motivations that might represent distinct pathways into gambling behavior.

Key Words: Bipolar disorder, depression, gambling, Internet, mood, motivations

Gambling behavior is motivated by a number of interrelated psychological and social factors (1,2). Improving our understanding of motivations for gambling can help us characterize the complex clinical presentations of problematic or pathological gambling (2–5). Although the precise motivations identified tend to vary depending on the population of gamblers surveyed (6–8), several classes of motivation tend to recur. These include gambling to raise money (6,7), gambling for excitement (6,9) or the intrinsic enjoyment of gambling including its social reinforcers (6,10,11), and gambling to escape from stress (6) or to cope with adverse events that depress mood (1,6). A sense of inquiry and competitiveness ("enhancement") has also been identified as a motivation for gambling (12). These motivations tend to reflect the distinct expectations that gamblers have about the positive rewarding aspects of gambling behavior, and their potential to relieve negative emotional states (13).

Some of these motivations are naturally influenced by variables such as gender (1,11), age (14), and, possibly, preferences for particular forms of gambling (9,15). However, studies have consistently shown that it is the emotional and monetary motivations that tend to be most enhanced among problem gamblers (1,2,14,16–18). Unsurprisingly, the mood-regulating functions of gambling behavior are salient features of etiologic accounts of pathologic gambling (19,20) and general perspectives on excessive gambling as an addictive response to aversive or stressful states (21).

Pathologic gambling, as defined by DSM-IV criteria (22), tends to present alongside other psychiatric difficulties including anxiety disorders, such as panic, together with alcohol and substance misuse (23,24). However, comorbidity with major depressive disorder is especially high, with some studies finding that up to two thirds of pathologic gamblers might satisfy diagnostic criteria for major depressive disorder (25,26). Although some of this comorbidity, together with increases in suicidality (27,28), can be attributed to the adverse life consequences of excessive gambling activity (29,30), pathologic gambling and depression may also share genetic risk (31), reflecting either a causal impact of the mood disorder on gambling behavior or a common underlying pathophysiology.

Other evidence attests to an association between bipolar disorder, a strongly genetic condition, and problem gambling (26,32). An etiologic relationship between bipolar disorder and gambling behavior would highlight the additional potential for pharmacologic and other treatments for bipolar disorder to have a positive impact on problem gambling behavior. Although clinical anecdote and recent small-scale trials of antidepressant and lithium treatment (33–36) suggest some potential for the pharmacologic management of pathologic gambling through improved mood regulation, we know relatively little about the specific psychological mechanisms that might allow experiences of mood elevation to promote gambling behavior in individuals who are vulnerable to bipolar disorder.

It is easy to imagine how a tendency to mood elevation and the symptoms of hypomania, including sleeplessness and an orientation toward reward-based behaviors (37), might drive

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gambling by enhancing its enjoyment and excitement. By contrast, depressive symptoms could diminish such motivations via anhedonia but instead provide an impetus to console or comfort oneself through gambling (13,17,20). Individuals who satisfy diagnostic criteria for bipolar I or bipolar II disorder will experience both poles of mood and will more frequently suffer significant episodes of depressed mood and anxiety than hypomania (38,39). Therefore, we might expect that the affective features of bipolar disorder and depression will influence the mood regulation and enjoyment aspects of gambling in different ways. Understanding the psychological mechanisms that link mood elevation and dysphoria to gambling behavior will clarify the relationship between gambling and mood disorders.

Here, we tested the hypothesis that the central affective experiences of bipolar disorder and depression—mood elevation and dysphoric symptoms—exert divergent effects on gambling motivations. We surveyed the motivations of a large sample of Internet gamblers ($n = 4125$) recruited directly from online gambling sites. We used exploratory principal components analysis (PCA) to derive factors that captured respondents' key gambling motivations, followed by hierarchical linear modeling to test links between mood elevation and dysphoria, and different gambling motivations. We explored these relationships in individuals whose gambling was or was not likely to be problematic.

Methods and Materials

The survey was approved by a United Kingdom National Health Service Research Ethics Committee. All participants provided informed consent electronically as part of the web survey.

Participants

A self-selected sample of 4125 Internet users were recruited via hyperlinks placed on gambling and gambling-related Web sites registered within Europe. Respondents provided information about demographic characteristics and their online gambling behavior (i.e., frequencies, preferred activities, modes of access), and completed validated screening questionnaires for psychological disorders. Further details of the Web-based methodology are provided in Supplement 1.

Seventy-nine percent of our respondents were male, with a mean (SD) age of 35.5 years (11.76). More than half were married (35.2%) or living with a partner (17.6%), with 41.4% being single, and the remainder divorced, separated, or widowed. Respondents tended to be educated to degree level or above (41.8%), others possessing college or vocational training (36.0%), or having completed secondary or primary education (22.2%). Most were employed full-time (55.8%), self-employed (11.4%), or part-time (6.2%); 6.6% fell into the "unemployed" category, approximately 5% were retired, and 5% were "taking care of the house." Most were located within the United Kingdom (68.8%), followed by the United States ($n = 364$, 8.8%), Canada ($n = 129$, 3.1%), Germany ($n = 104$, 2.5%), Ireland ($n = 72$, 1.7%), and Australia ($n = 61$, 1.5%). The remaining 13.6% were from other European and Asian countries. These characteristics are broadly typical of those reported in previous samples of Internet gamblers (40–44).

Measuring Gambling Motivations

Respondents rated how frequently their gambling behavior involved 11 motivations, using a 4-point Likert scale with response anchors of "never," "occasionally," "fairly often," and "very often," similar to that used in previous investigations (1,6,7,9,45). Three items tested the central motivation of gambling for money (6). Other items tested the need for excitement; desire to relieve boredom, routine, and negative mood; to socialize; and to test one's luck. The 11 items are listed in Table 1.

Measuring Psychological Disturbances

Respondents completed several validated screening questionnaires used to identify the presence of psychological disturbances. These were scored not to identify severe cases that might satisfy diagnostic criteria for major depressive disorder or bipolar disorder as specified by DSM-IV but rather to identify the presence of mood-related disturbances that might be expected to influence gambling behavior. Selected screening instruments included the 10-item criteria for DSM-IV problem gambling (22), scored positive with three or above items endorsed (46–49). These items assess the central features of pathologic gambling as represented by the DSM-IV criteria: pervasive loss of control, preoccupation with gambling-related behaviors, and the tendency to keep gambling to recover monetary losses.

Respondents who scored above threshold on the General Health Questionnaire (GHQ-12) (50) completed the Patient Health Questionnaire (PHQ-9) (51). The PHQ-9 includes the Primary Care Evaluation of Mental Disorders (PRIME-MD) (52) to confirm DSM-IV criteria for subsyndromal depressive experiences: three of nine items, including an indication of lowered mood, anhedonia, or both (52). The PHQ-9 also assessed panic disorder: all five anxiety items endorsed (52). All participants completed the Mood Disorders Questionnaire (MDQ) (53) to screen for previous symptoms of mood elevation and hypomanic

Table 1. Item Loadings from the Principal Components Analysis of 11 Gambling Motivations

Motivation for Gambling	Factor 1: Mood Regulation	Factor 2: To Obtain Money	Factor 3: For Enjoyment
To Escape from Routine	.835		
Because You Cannot Help It	.828		
To Make Yourself Feel Better (e.g., when sad/stressed/angry)	.790		
To Relieve Boredom	.644		.308
To Test Your Luck	.461		.303
To Make Money, As a Profession		.893	
Because You Need the Money	.320	.777	
Because You Enjoy It/It's Fun			.967
For the Thrill of It			.816
To Socialize			.391
For the Chance to Win Big Money		.355	.386

Item loadings are listed where they are greater than .3 (70).

experiences: scored as seven items or more endorsed out of 13 (54), this gives a retrospective estimate of (hypo)manic experience.

Respondents completed the CAGE alcohol screen (55) using a cutoff of two or above (56). They also indicated which, if any, illicit substances they had used in the last 12 months. Those who had used such substances also completed the 10-item Drug Abuse Screening Test (57) (scored positive with three or more items endorsed) (58). Finally, all respondents were asked whether they had ever considered harming themselves in any way because of problems with their gambling. Those who responded positively to this question completed an additional question about whether this had led them actually to harm themselves. All respondents were also asked whether they had ever self-harmed (by any means) for reasons having nothing to do with their gambling behavior.

Details of the screening instruments and their validity are provided in Supplement 1.

Analysis

Statistical analyses were conducted with SPSS (version 15) and MLWin 2.02 (http://www.cmm.bristol.ac.uk/MLwiN/index.shtml). We used an exploratory PCA to identify underlying structure in gambling motivations, using the frequency ratings of the 11 motivation items. Direct oblimin rotation was used because substantial correlation between factors was expected. Inspection of the PCA parameters indicated acceptable singularity, sampling accuracy, and significance of residuals (59). Factor extraction was based on eigenvalues of 1.0 and above, with factor scores calculated using the regression method to produce standardized scores with a mean of 0 and standard deviation of 1.0.

To test the relationships between gambling motivations on the one hand and demographic and clinical variables on the other, we used hierarchical linear regression (60). This analysis treated the motivation factor scores as repeated measures within each participant and simultaneously estimated the strength of associations between all the motivations factor scores (as identified by the aforementioned PCA) and a single set of regressors. We used categorical regressors, coded in binary format, for example, gender with "male" as the reference, employment status with "employed" as the reference, and the presence of psychological symptoms. Continuous variables (e.g., age) were represented as regressors in the form of standardized z scores. Because participants expressed their motivations for gambling as frequencies (i.e., they rated the strength of motivations in terms of how often they gambled because of them), we also included the sum of online gambling activities participated in, alongside the number of hours per day spent gambling online. This made it possible to measure strengths of associations between motivations and regressors over and above any confounding effects of overall gambling involvement.

Because this was an exploratory analysis, a minimum set of regressors were specified as gender, age, number of forms of online gambling participated in, hours per day gambling online, educated-to-degree level, unemployment, and then problem gambling, mood disturbance, depressive symptoms, panic, alcohol misuse, and substance misuse. The effects of having considered self-harm for gambling-related reasons, having actually self-harmed for gambling-related reasons, and of having self-harmed for nongambling-related reasons, were added one at a time to the standard regressors. Interaction terms representing the co-occurence of problem gambling and psychological disturbances were tested one at a time. Standard z tests were used to examine the significance of regression coefficients. The larger the z value (the mean of the regression coefficients divided by their standard error), the stronger the observed relationship between the motivation factor score and regressor.

Throughout, statistical significance was taken at the 1% level ($p < .01$).

Results

Factor Structure of Gambling Motivations

The PCA revealed that three factors appeared to underlie the gambling motivations of our sample, as shown in Table 1 (further details of the statistics of our PCA solution are provided in Supplement 1). These accounted for 64.5% of the total variance. One factor (Factor 1) included those items related to the desire to escape from routine and boredom, items relating to mood modification, along with the less defined motivation of simply gambling "because you can't help it." We named this factor the "mood regulation" factor. All three money-related motivations loaded onto the second grouping, which we called the "monetary motivation" factor, although the motivation of wanting to be in with a chance of winning big money actually loaded more strongly onto the final factor. This, the "enjoyment motivation" factor, was made up of six items relating to the fun of gambling, socialization, and the thrill of participating in gambling activities.

Gambling Motivation, Demographics, and Clinical Risk Factors

As expected, more hours spent gambling online and participation in a greater number of online gambling activities were associated with stronger factor scores for all three motivations identified in the PCA (all ps $< .0001$; Table 2). Female gamblers were more motivated by the desire to regulate mood than male gamblers ($p < .0001$), but less motivated to make money ($p <$

Table 2. Associations Between Three Factors Underlying Gambling Behavior on the Internet and Demographic Characteristics

	Factor 1: Mood Regulation		Factor 2: For Money		Factor 3: For Enjoyment	
	Mean	SE	Mean	SE	Mean	SE
Female Gender	.140^c	(.029)	−.244^c	(.033)	−.277^c	(.034)
Age	.040^b	(.012)	−.079^c	(.013)	.035^a	(.014)
Educated to Degree Level	−.045	(.023)	.060	(.027)	−.152^c	(.028)
Unemployed	−.021	(.047)	.111	(.054)	−.227^c	(.056)
Hours/Day Online Gambling	.063^c	(.013)	.346^c	(.015)	.153^c	(.015)
Sum of Online Gambling Activities	.218^c	(.013)	.157^c	(.015)	.344^c	(.016)

[a] $Z > 2.3; p < .01$.
[b] $Z > 3.09; p < .001$.
[c] $Z > 3.72; p < .0001$.

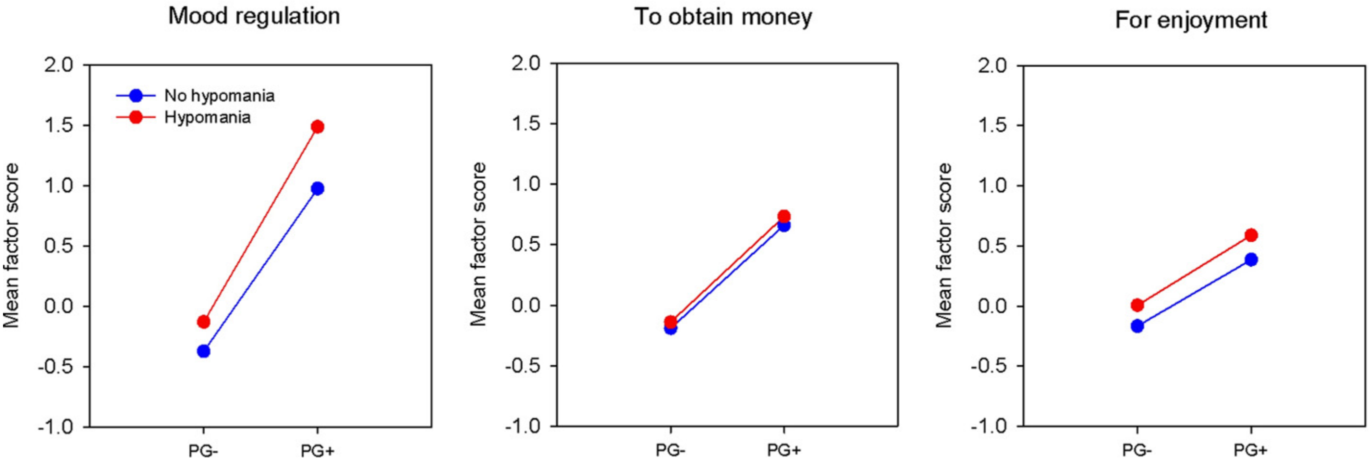

Figure 1. Mean factor scores for three gambling motivations (“mood regulation,” “to obtain money,” and “for enjoyment”) in 4125 Internet gamblers as a function of problem gambling (PG− vs. PG+), as identified using the DSM-IV diagnostic criteria (22), and a history of mood elevation (no hypomania vs. hypomania), as identified using the Mood Disorders Questionnaire (53).

.0001) or derive enjoyment ($p < .0001$). Older respondents tended to gamble for mood regulation reasons ($p < .001$) but not for money ($p < .0001$) or enjoyment ($p < .01$). Degree-level education was negatively associated with gambling for enjoyment in this sample ($p < .0001$), as was unemployment ($p < .0001$).

Mood Disturbance, Depression, and Anxiety. The impact of a history of hypomanic experiences on mean factor scores for mood regulation, money, or enjoyment motivation in respondents with and without problem gambling is shown in Figure 1. As expected, respondents who scored above threshold for problem gambling by DSM-IV criteria (PG+; 20.3% of the sample), reported stronger gambling motivations to regulate mood, obtain money, and to derive enjoyment compared with those who did not report problematic gambling (all ps $< .0001$; PG−). However, respondents who had experienced hypomanic symptoms, as captured by the MDQ (28.7% of the entire sample), reported stronger motivations to gamble to regulate mood than respondents who had not had such experiences ($p < .0001$), and this enhancement appears to have been amplified in those respondents who also reported problem gambling ($p < .001$; Figure 1, Table 3). Respondents who reported previous hypomanic experiences also gambled more for enjoyment than respondents without such experiences (Figure 1; $p < .001$). By contrast, hypomanic experiences did not influence gambling for money.

The impact of depressed mood on mean factor scores for mood regulation, money, or enjoyment motivation in respondents with and without problem gambling is shown in Figure 2. Survey respondents who reported depressed mood, identified using the PRIME-MD 10.3% of the sample) also reported stronger motivation to gamble to regulate mood compared with respondents who did not report depressed mood ($p < .0001$), again especially in those respondents who also reported problem gambling (6.0%; $p < .001$; Figure 2). However, in contrast with those who reported hypomanic experience, respondents with depressed mood reported significantly weaker motivations to gamble for enjoyment compared with those respondents whose mood was not depressed ($p < .0001$). This association was not

Table 3. Associations, as Regression Coefficients, Between Three Factors Underlying Gambling Behavior on the Internet and Clinical Characteristics

	Factor 1: Mood Regulation		Factor 2: To Obtain Money		Factor 3: For Enjoyment	
	Mean	SE	Mean	SE	Mean	SE
Problem Gambling	1.137[b]	(.033)	.423[b]	(.038)	.151[b]	(.039)
Mood Elevation	.257[b]	(.027)	−.037	(.031)	.111[a]	(.032)
Lowered Mood	.438[b]	(.042)	.077	(.048)	−.236[b]	(.050)
Panic	−.008	(.070)	−.046	(.080)	−.167	(.082)
Alcohol Misuse	.052	(.026)	−.024	(.030)	.116[b]	(.030)
Substance Misuse	.064	(.045)	−.053	(.051)	.044	(.052)
Gambling-Related-Self-Harm (Ideation)	.466[b]	(.049)	.166[a]	(.056)	−.183[a]	(.058)
Gambling-Related-Self-Harm (Actual)	.188[b]	(.084)	.062	(.096)	−.282[a]	(.099)
Nongambling-Related-Self-Harm (Actual)	.074	(.039)	.049	(.044)	−.057	(.045)
P/Gambling × Female Gender	.495[b]	(.083)	.012	(.095)	.622[b]	(.097)
P/Gambling × Mood Elevation	.158[a]	(.059)	−.084	(.068)	−.047	(.070)
P/Gambling × Lowered Mood	.410[b]	(.080)	−.072	(.091)	.032	(.094)
P/Gambling × Panic	.427[a]	(.132)	−.057	(.150)	−.010	(.155)
P/Gambling × Alcohol Misuse	−.135	(.059)	−.055	(.067)	−.234[a]	(.069)
P/Gambling × Substance Misuse	−.051	(.087)	−.051	(.099)	−.169	(.102)

[a] $Z > 3.09$; $p < .001$.
[b] $Z > 3.72$; $p < .0001$.

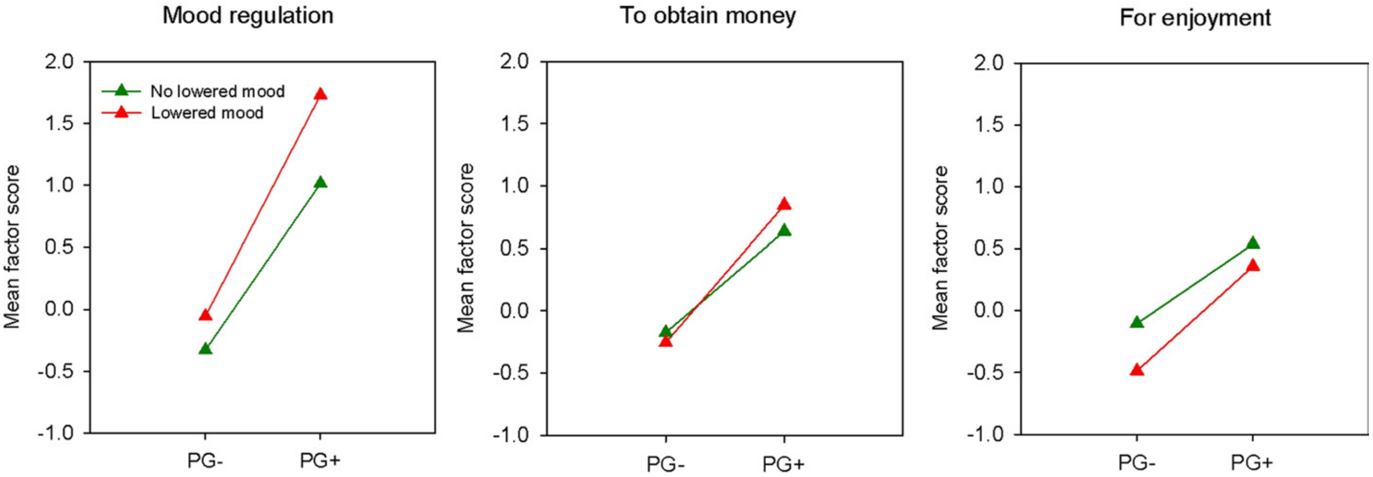

Figure 2. Mean factor scores for three gambling motivations ("mood regulation," "to obtain money," and "for enjoyment") in 4125 Internet gamblers as a function of problem gambling (PG− vs. PG+), as identified using the DSM-IV diagnostic criteria (22), and the presence of depressive symptoms (no lowered mood vs. lowered mood), as identified with the PRIME-MD (52).

influenced by co-occurring problem gambling (Figure 2). Finally, there was no association between depressed mood and the monetary motivations for gambling behavior.

The motivations of those respondents who reported panic states (3.2% of the sample) were different from those reporting depressed mood (Table 3). Panic experiences did not significantly influence any of the three gambling motivations; however, panic experiences and problem gambling together (1.7% of the sample) significantly increased gambling to regulate mood ($p < .001$; Table 3).

Alcohol and Substance Misuse. In general, unhealthy alcohol consumption, as measured by the CAGE questionnaire (30.0% of the sample), was positively associated with gambling for enjoyment ($p < .0001$; Table 3). However, this motivation was significantly less salient in respondents who experienced problem gambling and alcohol misuse together ($p < .001$; 8.3%). Finally, substance misuse (8.0%) did not alter any of the three gambling motivations, and none were enhanced (or diminished) in respondents with concurrent problem gambling and substance misuse (3.8% of the sample; Table 3).

Deliberate Self-Harm for Gambling or Nongambling Related Reasons. Respondents who had considered harming themselves specifically because of their gambling tended to gamble more for mood regulation reasons ($p < .0001$) and more for monetary reasons ($p < .001$), but less so for enjoyment ($p < .001$), than respondents who had not considered such action (Table 3). Respondents who had actually harmed themselves for gambling-related reasons also reported an enhancement in the mood regulation motivation ($p < .0001$) but a reduction in the enjoyment motivation ($p < .001$). By contrast, those respondents who had harmed themselves for nongambling-related reasons did not show any difference in gambling motivations compared with individuals without any history of deliberate self-harm.

Finally, the relationships between demographic features, gambling problems, and gambling motivations cited earlier were broadly unchanged if, instead of using a cutoff of three or more positive DSM-IV items to identify respondents with likely problem gambling, we used a stricter cut-off of five or more items to identify respondents with likely pathologic gambling (Tables S1 and S2 in Supplement 1). However, in this supplementary analysis, only pathologic gambling and mood elevation together was associated with significant additional enhancements in reported gambling to regulate mood ($p < .01$); pathologic gambling and dysphoria together did not further increase this gambling motivation.

Discussion

We surveyed 4125 users of Internet gambling sites and identified three broad motivations to gamble: to regulate mood, to make money, and for enjoyment. As expected, all the motivations were increased in individuals who also reported problems with their gambling, with the mood regulation and enjoyment factors being especially enhanced in female compared with male problem gamblers. The impact of mood disturbance on these factors was also clear. Both depressive symptoms and hypomanic experience enhanced the motivation to gamble to regulate aversive emotional states. However, depressed mood reduced gambling for enjoyment, whereas a history of mood elevation enhanced it. The motivation to gamble for money was not affected by either pole of mood experience. A history of deliberate self-harm (or self-harm ideation) specifically related to gambling was associated with heightened gambling to regulate mood but reduced gambling for enjoyment.

Limitations

Our survey involved a self-selected sample of gamblers, and the absolute rates of problem gambling or mood disturbances reported are not taken to reflect reliable prevalence estimates. We note, for example, the relatively high proportion of our sample that reported previous hypomanic experiences compared with those with depressed mood. One explanation for this may be that our measure of depressed mood covered current state (51), whereas our measure of hypomanic experiences was historical (53); alternatively, it might be that hypomanic mood disturbance, with its characteristic sleeplessness and reward orientation, might be overrepresented in samples recruited through the Internet (61).

Second, the presence of psychological disturbances involving mood, as well as substance and alcohol misuse, was assessed by questionnaire rather than semistructured interview, which is likely to have reduced the clinical specificity of our findings. However, the screening instruments (PRIME-MD and MDQ) were selected and scored not to provide for the precise diagnostic categorization of individual respondents but rather to identify the presence of mood disturbances that might, even at a subsyndromal level, enhance or diminish the motivations underlying gambling.

Third, our sample consisted of Internet gamblers, and recent population surveys indicate that Internet gambling remains a relatively low-prevalence activity (62). Motives for gambling vary with the population sampled (1), suggesting that the relationships between mood and gambling motivations identified here might not be observed in other gambling settings. We also note that four motivation items—"To relieve boredom," "To test your luck," "Because you need the money," and "For the chance to win big money"—load on more than one factor of the PCA solution. However, the motivations identified by our solution—gambling to regulate mood, gambling for money, and gambling for entertainment—are broadly comparable to those identified by investigations of land-based gambling (1,6,7,11,63), and inspection of the PCA solution itself indicates that it was statistically robust.

Motivations for Gambling on the Internet

Our findings throw new light on why different people use Internet gambling services (64). In our sample, male respondents tended to gamble more for monetary objectives and for enjoyment, but less so to regulate mood, than female respondents. Consistent with investigations of land-based gamblers, increasing age was associated with more gambling for enjoyment and to regulate mood but less gambling for money (14,63). Being educated to degree level was negatively associated with gambling for enjoyment, perhaps reflecting the high number of sports bettors and other gamblers in our sample who see Internet gambling in instrumental terms as a means of income. Unemployment status went along with lowered motivation to gamble for enjoyment, which is likely to reflect the lack of means available for gambling as a recreational outlet. Alcohol misuse, frequently co-occurring with problem gambling (65), enhanced the enjoyment-related motivations of gambling behavior. However, caseness for substance misuse did not alter gambling for mood regulation, money, or enjoyment, suggesting that drug misuse in our sample did not influence the major motivations for gambling through the Internet.

Mood Disturbances and Gambling Motivations

Problem gambling tends to be comorbid with significant disturbances of affect including depression, anxiety, and bipolar disorder. Some of this dysphoria and anxiety can be attributed to the life consequences of excessive gambling in affected individuals (24); however, the overrepresentation of mood disorders in samples of pathologic gamblers argues for more direct connections. Our data indicate that the mood experiences that are prominent features of depression and bipolar disorder have opposing effects on key gambling motivations. Specifically, lowered mood, as identified in our sample using the PRIME-MD, *reduced* the tendency to gamble for enjoyment but *increased* the tendency to gamble to regulate emotional states, suggesting that gambling while depressed may be driven by the wish to remediate dysphoric states. The extent to which gambling actually does assist in the resolution of depressed mood is unclear (66), but, drawing upon previous research, gambling can come to represent a form of coping that can provide escape, distraction, or relief from stress (13,16).

By contrast, experiences of hypomania, in the form of sleeplessness and an orientation toward reward-based behaviors, were associated with an *increased* motivation to gamble for mood regulation purposes and an *increased* motivation to gamble for enjoyment. This suggests that the connection between bipolar experiences and gambling reflects two motivations: 1) capacity of gambling to lift low mood or distract from depressive/stressful states and 2) its intrinsic fun, enjoyment, or hedonic value. We hypothesize that the enhancement of the enjoyment derived from gambling might be one important mechanism that predisposes individuals with vulnerability to bipolar disorder to begin gambling in the first place, in much the same way that enjoyment can enhance the attraction of other powerful reinforcing activities, such as alcohol and substance misuse (39). These states might also mediate preferences for particular gambling activities involving high rates of play and other structural characteristics that heighten their positive reinforcement value and gambling involvement (67).

Individuals who report periods of mood elevation also experience frequent periods of depression and also anxiety (38,39). Prospective studies that measure mood fluctuations and changes in gambling behavior simultaneously will be required to understand how much gambling reflects prior dysphoric states in individuals with hypomanic experiences. However, it seems likely that individuals who start gambling when in a state of elevated mood will naturally be drawn to gamble to relieve negative affective states. More speculatively, these data suggest that the prominent mood regulation and enjoyment motivations distinguish the experience of gambling—and, perhaps, problematic gambling—in the context of hypomania from the experience of problem gambling without these mood features.

We also found that both depressed mood and previous hypomanic experiences were associated with further amplification of the motive of mood regulation in those individuals whose gambling was likely to have become problematic. This suggests that individuals who experience mood disturbances and for whom gambling has adverse functional life consequences nevertheless still perceive continued gambling as an effective strategy for emotional regulation. However, our data also demonstrate the multiplicity of gambling motivations. Respondents who reported considering self-harm for gambling-related reasons (Table 3; see also [68]) reported not only increased gambling to regulate mood regulation but also gambling for money, presumably reflecting a pressing need to recover their financial position. However, actual self-harm related to gambling involvement was only associated with mood regulation, perhaps reflecting the heightened severity of mood disturbances in this subgroup (69).

These data provide new and important information about the relationships between mood disturbances and gambling motivations. We have demonstrated in a large sample of Internet gamblers how depressive states and hypomania have opposing effects on the enjoyment derived from gambling but how both amplify its mood regulatory motivations, especially in problem gamblers. Depression, bipolar disorder, and pathologic gambling may share aspects of pathophysiology (31). Motivations, as they relate to wider aspects of psychopathology, represent one means of characterizing the complex impact of mood upon the phenotypes of problem gambling.

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